Title	***RF Spares and Maintenance***			
Project Requestor	Dave Bromberek			
Date	4/17/08			
Group Leader(s)	Ali Nassiri			
Machine or Sector Manager	Louis Emery			
Category	Obsolescence/Spares			
Content ID*	APS_1271283	Rev.	1	8/15/08 12:00 AM

*This row is filled in automatically on check in to ICMS. See Note [1]

Description:

Start Year (FY)	**2009**	**Duration (Yr)**	**2**

Objectives:

Redesign the LLRF "generator board". This board is the platform used in the modulator and phase shifter boards for the PAR, Booster and Storage Ring RF systems. The modulator and phase shifter boards would then be upgraded using the new generator board.

Benefit:

Higher reliability and faster recovery from faults. Greater rf amplitude control dynamic range on the modulator board. Improved controls diagnostics.

Risks of Project: See Note [2]

N/A

Consequences of Not Doing Project: See Note [3]

The current modulator and phase shifter boards rely on obsolete 1990 vintage, B&K VXI acquisition modules that are no longer supported by the manufacturer. The B&K modules have a cumbersome topology that makes them difficult to work on and have no diagnostic capability.
As current stocks are consumed, faults would need to be trouble-shot down to the component level in the event of failure. Once the current stock of obsolete IC's are consumed, some faults would be unrecoverable.

Cost/Benefit Analysis: See Note [4]

Eliminates reliance on obsolete modules that are no longer supported by the manufacturer. Increases the dynamic range of the modulator board rf amplitude control and adds controls diagnostic capability.
Having boards on-hand as spares would reduce downtime in the event of failure by a considerable amount, as opposed to troubleshooting down to the component level.

Description:

Year 1
Redesign and prototype the "generator board" and amplitude modulator gold box.
Perform testing and evaluation.

Year 2
Production run of modulator and phase shifter boards (22 boards for installation in PAR, Booster and Storage Ring, and an additional 6 boards as operational spares).

Funding Details

Cost: ($K)
Use FY08 dollars.

Year	AIP	Contingency
1	10	2
2	112	10
3		
4		
5		
6		
7		
8		
9		
Total	122	12

Contingency may be in dollars or percent. Enter figure for total project contingency.

Effort: (FTE)
The effort portion need not be filled out in detail by March 28

Year	Mechanical Engineer	Electrical Engineer	Physicist	Software Engineer	Tech	Designer	Post Doc	Total
1		0.3		0.2	0.1	0.1		0.7
2		0.1		0.2	0.1			0.4
3								0
4								0
5								0
6								0
7								0
8								0
9								0

Notes:

[1] **ICMS**. Check in first revision to ICMS as a *New Check In*. Subsequent revisions should be checked in as revisions to that document i.e. C*heck Out* the previous version and C*heck In* the new version. Be sure to complete the *Document Date* field on the check in screen.

[2] **Risk Assessment.** Advise of the potential impact to the facility or operations that may result as a consequence of performing the proposed activity. Example: If the proposed project is undertaken then other systems impacted by the work
include ... (If no assessment is appropriate then enter NA.)

[3] **Consequence Assessment.** Advise of the potential consequences to the facility or to operations if the proposal is not executed. Example: If the proposed project is not undertaken then ____ may happen to the facility. (If no assessment is appropriate then enter NA.)

[4] **Cost Benefit Analysis.** Describe cost efficiencies or value of the risk mitigated by the expenditure. Example: Failure to complete this maintenance project will result in increased total costs to the APS for emergency repairs and this investment of ___ will also result in improved reliability of ____. (If no assessment is appropriate then enter NA.)